

IN THE SPECIFICATION

Please replace the paragraph beginning at page 1, line 18, with the following rewritten paragraph:

For example, in the Unexamined Japanese Patent Application Publication No. Hei8-223492, the camera built-in mobile imaging device in which the video taking device such as the video camera, or the like is provided is set forth, and the ~~taking~~ direction of taking pictures with the video camera can be changed by rotating the camera head portion.

According to such imaging device, the ~~taking~~ direction of the video camera can be changed while holding the direction of the body case (casing), and thus the image can be picked up in plural directions while checking the image picking-up state displayed on the displaying member.

Please replace the paragraph beginning at page 2, line 4, with the following rewritten paragraph:

Also, FIGS.20A and 20B are perspective views showing the mobile telephone using the imaging device in the prior art. FIG.20A is a perspective view of the mobile telephone viewed from the front side, and FIG.20B is a perspective view of the mobile telephone viewed from the rear side. In FIGS.20A and 20B, 28 is a main body of the mobile telephone, 29 is a display portion, 30 is an imaging member, and 31 is a mirror member used when the image of the photographer himself or herself is picked up. In such mobile telephone, ~~the~~ miniaturization of the device can be achieved, but it is impossible to check the image picking-up state when the image of the photographer himself or herself is picked up. As a result, another subject checking member such as the mirror member 31, or the like is needed.

Please replace the paragraph beginning at page 2, line 20, with the following rewritten paragraph:

Since the mobile imaging device in the prior art is constructed as above, the image can be picked up in plural directions while checking the image picking-up state of the subject, nevertheless there are ~~the~~ problems in that ~~the~~ miniaturization of the device is difficult since a rotating mechanism for rotating the camera head portion must be provided and that ~~an~~ the electrical connection structure becomes complicated since the electrical connection between the video camera and the mobile imaging device main body must be provided to the rotating mechanism for the camera head portion. There is a further problem in that, if such rotating mechanism is provided, the mechanical strength of the rotating mechanism ~~becomes weak~~ is weakened and thus the mobile imaging device is destroyed or gets out of order even when the weak impact caused in the falling, etc., for example, is applied.

Please insert the following title between lines 19 and 20 on page 3:

SUMMARY OF THE INVENTION

Please replace the paragraph beginning at page 3, line 20, with the following rewritten paragraph:

The present invention has been made to overcome the above-noted problems, and it is therefore an object of the present invention to provide a novel imaging device capable of picking up the image in plural directions without the rotating mechanism, etc. and displaying respective picked-up images clearly on the relatively small display portion, that is provided to the small electronic device such as the mobile telephone, etc., and also a novel mobile terminal device capable of picking up the image in plural directions by using this imaging device and achieving the miniaturization, etc. of the device.

Please delete the title at line 6 on page 4 as follows:

~~[Means for Solving the Problems]~~

Please delete line 1 on page 9 as follows:

~~[FIG. 1]~~

Please delete line 10 on page 9 as follows:

~~[FIG. 4]~~

Please delete line 14 on page 9 as follows:

~~[FIG. 3]~~

Please replace the paragraph beginning at page 9, line 11, with the following rewritten paragraph:

Fig. 3 is a view showing a the positional relationship, etc. between respective images formed on an imaging surface 4e of an imaging element 4 shown in FIG.1 and FIG.2.

Please delete line 14 on page 10 as follows:

~~[FIG. 4]~~

Please replace the paragraph beginning at page 9, line 15, with the following rewritten paragraph:

Fig. 4 is a view showing a the positional relationship, etc. between respective images formed on the imaging surface 4e of the imaging element 4 when a light shielding member is not provided in FIG.3.

Please delete line 19 on page 10 as follows:

~~[FIG. 5]~~

Please delete line 23 on page 9 as follows:

~~[FIG. 6]~~

Please delete line 6 on page 10 as follows:

~~[FIG. 7]~~

Please delete line 10 on page 10 as follows:

~~{FIG. 9}~~

Please delete line 14 on page 10 as follows:

~~{FIG. 10}~~

Please delete line 17 on page 10 as follows:

~~{FIG. 11}~~

Please delete line 21 on page 10 as follows:

~~{FIG. 12}~~

Please delete line 25 on page 10 as follows:

~~{FIG. 13}~~

Please delete line 3 on page 11 as follows:

~~{FIG. 14}~~

Please delete line 7 on page 11 as follows:

~~{FIG. 15}~~

Please delete line 10 on page 11 as follows:

~~{FIG. 16}~~

Please delete line 15 on page 11 as follows:

~~{FIG. 17}~~

Please delete line 19 on page 11 as follows:

~~{FIG. 18}~~

Please delete line 24 on page 11 as follows:

~~{FIG. 19}~~

Please delete line 2 on page 12 as follows:

~~{FIG. 20}~~

Please replace lines 6-8 on page 12 with the following rewritten lines:

{0019}

{Embodiments of the Invention}

{Embodiment 1):

Please replace the paragraph beginning at page 13, line 11, with the following rewritten paragraph:

Also, in FIG.2, ~~9~~, a holder for ~~a~~ holding the first imaging lens 1 is shown along with, the second imaging lens 2, and the reflecting member 3 at predetermined positions; ~~10~~, a light shielding member 10 provided ~~to~~ for the holder 9, for shielding optical paths of the image picked up via the first imaging lens 1 and the image picked up via the second imaging lens 2 so as not to interfere optically with each other; ~~11~~, a. Also shown is a sensitivity characteristic correction filter 11 such as an infrared cutting filter, or the like which is provided on the optical paths of the images image picked up via the first and second imaging lenses 1, 2, for removing an unnecessary infrared component from the image to be formed on the imaging surface 4e of the imaging element 4; ~~12~~, a substrate 12 such as a printed board on a surface of which wiring patterns, etc. are formed and also the imaging element 4, the signal processing member 5, the holder 9, and the like are mounted on such substrate; and ~~13~~, ~~is an~~ electronic parts 13 such as a capacitor, a resistor, etc. are mounted an a rear surface side of the substrate 12. In the imaging device of the present embodiment, the signal processing member 5 is formed on a chip as IC (Integrated Circuit), for example, and mounted at the position opposing to the imaging element 4 via the substrate 12. ~~But~~ However, such configuration is not always needed, and the similar advantage can be achieved by providing the signal processing member 5 at any place in the device.

Please replace the paragraph beginning at page 14, line 25, with the following rewritten paragraph:

Next, ~~an~~ operation of the embodiment will be explained hereunder. The image of the subject, which is positioned in the normal direction or the substantially normal direction with respect to the imaging surface 4e of the imaging element 4, is picked up via the first imaging lens 1 and then formed on the imaging surface 4e of the imaging element 4. Also, the image of the subject, which is positioned in the parallel direction or the substantially parallel direction to the imaging surface 4e of the imaging element 4, is picked up via the second imaging lens 2 and then formed on the imaging surface 4e of the imaging element 4 via the reflecting member 3. In this manner, the images positioned in plural directions that are perpendicular directions or substantially perpendicular directions (referred to as the “perpendicular directions” hereinafter) mutually can be formed on the imaging surface 4e of the imaging element 4 respectively. At that time, since the light shielding member 10 is provided between the optical path of the first imaging lens 1 and the optical path of the second imaging lens 2, the images picked up via the first imaging lens 1 and the second imaging lens 2 can be formed on the imaging surface 4e of the imaging element 4 respectively in the situation ~~that~~ wherein their mutual optical interference is suppressed.

Please replace the paragraph beginning at page 17, line 23, with the following rewritten paragraph:

As shown in FIG.3, if the light shielding member 10 is provided, the optical paths of peripheral edge portions of the images picked up via the first imaging lens 1 and the second imaging lens 2 are shielded by the light shielding member 10 respectively. Therefore, the existence of overlapped portion of the first and second images is not caused on the imaging surface 4e and thus the image reading areas 4b and 4d can be set wider. If the reading areas

are set wide in this manner, the resolution of the image displayed on the display portion 8 can be improved, so that it is possible to display the images more clearly. Also, as shown in FIG.4, unless the light shielding member 10 is provided, the peripheral edge portions of the first and second images formed on the imaging surface 4e are overlapped mutually. In this case, since it is the images on the image reading areas 4b and 4d that are actually employed to display the images, the mutual overlapping of the images does not appear when the images are watched. In addition, if an imaging optical system which can ~~dim~~ sufficiently dim out areas other than image forming circles and form the image of the subject, is employed and also the image reading areas 4b and 4d are set to the size that is not affected by the interference, it is possible to eliminate the influence of such overlapping when the picked-up image is monitored on the display portion 8.

Please replace the paragraph beginning at page 22, line 18, with the following rewritten paragraph:

In this case, in the imaging device shown in FIG.2, the mirror is employed as the reflecting member 3, but such reflecting member may be constructed by other member. FIG.5 is a sectional view showing another example of the configuration of the imaging device according to the embodiment 1. In FIG.5, reference number 3a is a triangular prism constituting the reflecting member. In FIG.5, the same symbols denote the same or equivalent portions as shown in FIGS. 1-4. As shown in FIG.5, even if the triangular prism is employed, the similar advantages to the imaging device shown in FIG.2 can be achieved.

Please replace the paragraph beginning at page 23, line 4, with the following rewritten paragraph:

Also, in the imaging device shown in FIG.2, the imaging element 4 is provided on the surface side of the substrate 12, i.e., the surface on which the first and second imaging lenses 1, 2, but the imaging element 4 may be arranged on the back surface side of the substrate 12. FIG.6 is a sectional view showing still another example of the configuration of the imaging device according to the embodiment 1. In this example, the first and second imaging lenses 1, 2 and the imaging element 4 are arranged to put the substrate 12 between them. Therefore, an opening portion is provided in the substrate 12, and the imaging element 4 is bump-mounted on the back surface side of the substrate 12 to expose the imaging surface 4e from the opening portion. Accordingly, ~~the~~ a reduction in size of the device can be achieved and also the images picked up via the first imaging lens 1 and the second imaging lens 2 can be formed on the imaging surface 4e of the imaging element 4.

Please replace the paragraph beginning at page 23, line 21, with the following rewritten paragraph:

Also, in the imaging device shown in FIG.2, the infrared cutting filter 11 is provided onto the imaging surface 4e of the imaging element 4, and the light shielding member 10 is provided close to the surface of the infrared cutting filter 11. In this case, the light shielding member 10 may be provided close to the imaging surface 4e of the imaging element 4. FIG.7 is a sectional view showing yet still another example of the configuration of the imaging device according to the embodiment 1. In this example, since the light shielding member 10 is provided to extend to the imaging surface 4e of the imaging element 4, the optical path of the image picked up via the first imaging lens 1 and the optical path of the image picked up via the second imaging lens 2 can be light-shielded close to the surface of the imaging surface 4e. Accordingly, even if the imaging optical system which has a small reduction in a quantity of peripheral light of the optical image is employed, the interference of the images picked up

via the first imaging lens 1 and the second imaging lens 2 can be prevented and thus the good image can be displayed.

Please replace the paragraph beginning at page 24, line 16, with the following rewritten paragraph:

In this case, the mirror is employed as the reflecting member 3 in FIG.7, but the triangular prism may be employed. Also, if the triangular prism is applied to the imaging device having the configuration in which the imaging element 4 shown in FIG.6 is bump-mounted, ~~the~~ similar advantages can be achieved.

Please amend line 23 at page 24 as follows:

{Embodiment 2};

Please replace the paragraph beginning at page 24, penultimate line, with the following rewritten paragraph:

Next, a mobile terminal device according to an embodiment 2 of the present invention will be explained with reference to FIG.8, FIG.9 and FIGS.10A and 10B hereunder. FIG.8 is a perspective view showing an external appearance of a mobile terminal device according to the embodiment 2. FIG.9 is a view showing schematically an arrangement relationship of an imaging device employed in the mobile terminal device shown in FIG.8. The mobile terminal device according to the present embodiment is the mobile terminal device using the imaging device according to the above embodiment 1 and shows an imaging device built-in mobile terminal device, for example. In FIG.8, 15 is a main body of the mobile terminal device having the imaging device according to the above embodiment 1 and a transmitting/receiving member for the voice communication, the data communication, etc. therein; 16, is a

transparent protection cover for protecting the display portion 8 of an imaging device 14; 17, is a transparent protection cover for protecting the first imaging lens 1 of the imaging device 14; and 18, is a transparent protection cover for protecting the second imaging lens 2 of the imaging device 14. The display portion 8, the first imaging lens 1, and the second imaging lens 2 are positioned on the back sides of transparent protection covers 16, 17, 18 respectively.

Please replace the paragraph beginning at page 25, line 23, with the following rewritten paragraph:

Also, in FIG.9, reference number 19 is represents a person who picks up the image by the mobile terminal device according to the embodiment 1 (referred simply to as the “user” hereinafter), and the state that the user 19 looks at the display portion 8 with the eye is shown. Reference number 8a shows a flow of the image signal from the imaging element 4 to the display portion 8. As shown in FIG.9, the first imaging lens 1 is arranged such that its optical axis direction is directed in the same direction as the display direction of the display portion 8, and the second imaging lens 2 is arranged such that its optical axis direction is directed in the direction perpendicular or substantially perpendicular to the optical axis direction of the first imaging lens 1. Also, both the imaging element 4 and the display portion 8 have a flat structure, and the imaging surface 4e and the display screen are directed in the same direction. In FIG.9, the same symbols denote the same or equivalent portions, and thus the detailed explanation about them will be omitted.

Please replace the paragraph beginning at page 30, penultimate line, with the following rewritten paragraph:

Also, in the mobile terminal device according to the embodiment 2, a difference is provided exists between an angle of view of the first imaging lens 1 and an angle of view of the second imaging lens 2 to pick up the image. In other words, the first imaging lens 1 is used to pick up the image of the user 19 himself or herself whereas the second imaging lens 2 is used to pick up the image of the subject 20 other than the user 19, e.g., the subject 20 at a remote position from the user 19, so that respective distances to the imaging objects are different. Therefore, the angle of view of the first imaging lens 1 to pick up the imaging object positioned at a relatively short distance is set wider than the angle of view of the second imaging lens 2. In this case, the reduction in the angle of view of the imaging lens can be facilitated as the distance from the imaging lens to the imaging element 4 becomes longer. Therefore, the back focal distance from the second imaging lens 2 to the imaging element 4 is set longer by arranging the reflecting member 3 on the optical path of the second imaging lens 2 which is used to pick up the image of the subject 20 at a remote position from the user 19.

Please replace the paragraph beginning at page 31, line 21, with the following rewritten paragraph:

In this manner, if the angle of view of the first imaging lens 1 is expanded to get the wide-angle imaging, the proper image can be picked up when the user 19 picks up the user's image. Normally, the distance from the imaging device to the imaging object is about 30 cm to 40 cm when the user 19 picks up the user's image, and at this time the angle of view of the first imaging lens 1 of 52 degree to 60 degree is fitted to take the bust shot (the image containing the portion from the breast to the face when mainly the human face is to be picked up) of the person. More particularly, the angle of view of the first imaging lens 1 is set based on these facts.

Please amend line 9 at page 34 as follows:

{Embodiment 3};

Please replace the paragraph beginning at page 34, line 10, with the following rewritten paragraph:

Next, a mobile terminal device according to an embodiment 3 of the present invention and an imaging device employed therein will be explained with reference to FIG.11, FIG.12, and FIGS.13A and 13B hereunder. FIG.11 is a perspective view showing an external appearance of a mobile terminal device according to the embodiment 3. FIG.12 is a block diagram showing a configuration of an imaging device employed in the mobile terminal device shown in FIG.11. The mobile terminal device according to the present embodiment further provides a member for informing the subject side of the imaging fact when the image of the imaging object except the user himself or herself is picked up. In FIG.11 and FIG.12, reference number 21 is a light emitting member provided on the surface of the mobile terminal device main body 15 on which the second imaging lens 2 is arranged, for emitting the light when the image is picked up via the second imaging lens 2. The light emitting member 21 consists of a light emitting diode (LED), etc. A The timing of the lighting of the light emitting member 21 is controlled in response to the selection of the imaging signal by the selecting member 6, for example. In FIG.9, the same symbols denote the same or equivalent portions and their detailed explanation will be omitted.

Please replace the paragraph beginning at page 36, line 23, with the following rewritten paragraph:

In the mobile terminal device according to the present embodiment, the selecting member 6 performs a the role of the operating member for causing the light emitting member 21 to emit the light. As described above, since normally the mobile terminal device such as

the mobile telephone, etc. has the operating portion (not shown) such as the dial keys, etc. by which the external input can be input, the lighting of the light emitting member 21 may be controlled by the operating signal input externally from this operating portion, for example. In this case, the operating portion performs the function of the operating member.

Please amend line 10 at page 37 as follows:

{Embodiment 4};

Please amend line 21 at page 40 as follows:

{Embodiment 5};

Please amend line 12 at page 42 as follows:

{Embodiment 6};

Please amend line 13 at page 44 as follows:

{Advantages of the Invention};

Please delete the Abstract at page 55 and replace it with the following new Abstract: